

**Summary:**

The sample is digested via Kjeldahl digestion in the presence of sulfuric acid, potassium sulfate, and a mercury catalyst at a final temperature of 380°C. Free ammonia and organic nitrogen compounds are converted to ammonium sulfate under these conditions. Nitrogenous compounds of some industrial wastes, such as amines, nitro compounds, hydrazones, oximes, semicarbazones, and some refractory tertiary amines, may not be converted. The sample is neutralized and made alkaline with sodium hydroxide. The ammonia gas that is generated passes under a gas diffusion membrane and into a receiving solution that contains an indicator reagent. The extent of the color change measured at 590 nm is proportional to the concentration of total Kjeldahl nitrogen (TKN) present in the sample.

**Interferences:**

High nitrate concentrations (greater than 10 times the TKN level) negatively interfere with the analysis. Prevent the reaction between nitrate and ammonia by using an anion exchange resin (chloride form) to remove nitrate prior to the analysis.

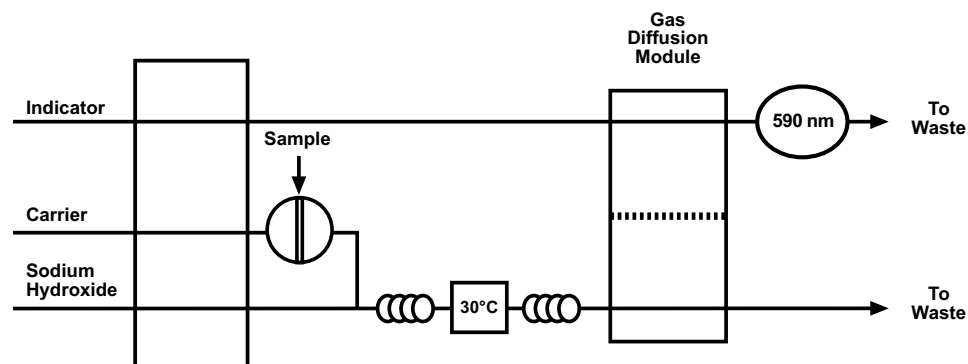
**Performance Specifications:**

Range:	0.20–10 mg/L TKN
Throughput:	40 samples/hour
Precision:	
0.50 mg/L	<3% RSD
5.0 mg/L	<2% RSD
Method Detection Limit (MDL):	0.02 mg/L TKN

**Chemicals:**

Ammonium Chloride, NH <sub>4</sub> Cl	Sodium Hydroxide, NaOH
Hydrochloric Acid, concentrated, HCl	Sulfuric Acid, concentrated, H <sub>2</sub> SO <sub>4</sub>
Potassium Sulfate, K <sub>2</sub> SO <sub>4</sub>	TKN/Gas Diffusion Indicator
Red Mercuric Oxide, HgO	(OI Analytical Part #A002510)

**Basic Flow Diagram:**



**Selected References:**

Ramsing, A.; Ruzicka, J.; Hansen, E.H. *Acta Chem. Scand.* **1980**, *114*, 165.

Svensson, G.; Anfalt, T. *Acta Chem. Scand.* **1982**, *119*, 7.

Ruzicka, J.; Hansen, E.H. *Flow Injection Analysis*; Wiley & Sons: New York, 1981.